Subpart E—Gaseous Exhaust Test Procedures

§ 90.401 Applicability.

(a) This subpart describes the procedures to follow in order to perform exhaust emission tests on new nonroad spark-ignition engines and vehicles subject to the provisions of subpart A of part 90. Provisions specific to raw gas sampling are in §90.414 through §90.419, provisions specific to constant volume sampling are in §90.420 through §90.426. All other sections in this subpart apply to both raw gas sampling and constant volume sampling except where indicated otherwise.

(b) Requirements for emission test equipment and calibrating this equipment are found in subpart D of this part.

§ 90.402 Definitions.

The definitions in §90.3, §90.101, and §90.302 apply to this subpart.

§ 90.403 Symbols, acronyms, and abbreviations.

(a) The acronyms and abbreviations in §90.5 apply to this subpart.

(b) The symbols in Table 1 in Appendix A to Subpart D apply to this subpart.

§ 90.404 Test procedure overview.

(a) The test consists of prescribed sequences of engine operating conditions to be conducted on an engine dynamometer or equivalent load and speed measurement device. The exhaust gases generated during engine operation are sampled either raw or dilute and specific components are analyzed through the analytical system.

(b) The test is designed to determine the brake-specific emissions of hydrocarbons, carbon monoxide, carbon dioxide, and oxides of nitrogen and fuel consumption. The test consists of three different test cycles which are application specific for engines which span the typical operating range of nonroad spark-ignition engines. Two cycles exist for Class I and II engines and one is for Class III, IV, and V engines (see §90.103(a) and §90.116(b) for the definitions of Class I—V engines). The test cycles for Class I and II engines consist of one idle mode and five power modes at one speed (rated or intermediate). The test cycle for Class III, IV, and V engines consists of one idle mode at idle speed and one power mode at rated speed. These procedures require the determination of the concentration of each pollutant, fuel flow, and the power output during each mode. The measured values are weighted and used to calculate the grams of each pollutant emitted per brake kilowatt hour (g/kW-hr).

(c)(1) When an engine is tested for exhaust emissions the complete engine must be tested, with all emission control devices installed and functioning.

(2) On air cooled engines, the cooling fan must be installed. For engines whose cooling fan serves a dual purpose, such as an air pump/blower, an external fan may be used to provide the engine with cooling air and the original cooling fan may be removed.

(d) All emission control systems installed on or incorporated in the application must be functioning during all procedures in this subpart. In case of component malfunction or failure, no maintenance is allowed without prior approval from the Administrator, in accordance with §90.119.

§ 90.405 Recorded information.

(a) Record the information described in this section for each test, where applicable.

(b) *Test data; general.* (1) Engine identification number.

(2) Engine emission control system.

(3) Test operator(s).

(4) Number of hours of operation accumulated on the engine prior to beginning the warm-up portion of the test (to the nearest tenth hour).

(5) Fuel identification.

(6) For 2-stroke engines, fuel/oil mixture ratio.

(7) Date of most recent analyzer bench calibration.

(8) All pertinent instrument information such as tuning, gain, serial numbers, detector number, and calibration curve(s). As long as this information is traceable, it may be summarized by system number or analyzer identification numbers.

(c) *Test data; pre-test.* (1) Date and time of day.

(2) Test number.